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ABSTRACT

In the course of a national survey of schools funded under Chapter 1 of the Education Consolidation and Improvement Act, other studies and data were reviewed to determine what was already known about compensatory education. This literature review covers several types of studies on the nature of Title I/Chapter 1 instructional services, staff, and coordinating mechanisms, including the following: (1) previous surveys of compensatory education; (2) Federal reports on the nature and scope of compensatory education; (3) selected studies or evaluations of the effectiveness of compensatory education; and (4) reviews of effective instructional practices relevant to compensatory education programs. The review is comprised of four sections. The first section, "Scope of Compensatory Education," surveys types of compensatory education, the prevalence of compensatory education, and types of services. The second section, "Nature of Compensatory Education Instructional Services," covers instructional exposure, strategies, content, and climate. The third section, "Characteristics of Compensatory Education Program Staff," reviews the literature on education and training, experience and certification, and the nature of teaching positions. The fourth section, "Coordination of Compensatory Education with Other Instruction," examines instructional settings and the mechanisms used to coordinate compensatory education with other instructional programs. A list of 35 references is appended. (AF)

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REVIEW OF LITERATURE

FOR

NATIONAL SURVEY OF ECIA CHAPTER 1 SCHOOLS

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Introduction

During the course of the 1986 OERI/Westat national survey of Chapter 1 schools, other studies and data pertaining to Title I/Chapter 1 services, staff and coordinating mechanisms were reviewed to determine what was already known about compensatory education. This information was considered important for two reasons. First, past studies could provide guidance in identifying substantive and methodological issues, developing research questions, specifying study variables, and constructing data collection instruments. Second, the results of those studies which were similar in content to the current survey could be employed in looking at changes over time in compensatory education services, staff and coordinating mechanisms.

This review of the literature covers several types of studies and reports on the nature of Title I/Chapter 1 instructional services, staff and coordinating mechanisms. These sources include previous surveys of compensatory education, federal reports on the nature and scope of compensatory education, selected studies or evaluations of the effectiveness of compensatory education, and reviews of effective instructional practices relevant to compensatory education programs.

The review is organized into four major categories: (1) the scope of compensatory education services, (2) the nature of instructional services provided, (3) characteristics of compensatory education program staff, and (4) mechanisms used to coordinate instructional services of compensatory education with the regular and other special instructional programs.

Scope of Compensatory Education

The scope of compensatory education can be described in many ways. A fairly comprehensive description would include (a) variations in what different funding sources mean by compensatory education; (b) the prevalence of the different types of compensatory education in terms of the number of school districts or schools with compensatory education programs, the number of staff providing services, the number of students being served, and the amount of funding; (c) the types of services provided in terms of instructional subject areas and non-instructional support areas; and (d) the prevalence of each type of service.

Each of these aspects is included in this review of the scope of compensatory education. After a discussion of definitions and the different types of compensatory education, the types of services that have been provided and their prevalence are described.

Types of Compensatory Education

Although the primary purpose of the 1986 OERI/Westat survey was to describe the nature and extent, the providers, and the coordination of instructional services funded by Chapter 1, these services were to be compared with those funded by other compensatory education programs as well as with the regular instructional program. Thus, the issue of defining what is meant by "compensatory education" required some consideration.

As pointed out by Dougherty (1985), the idea of compensatory education evolved in the 1960s as part of the war on poverty. Education was viewed

as critical to the reduction of poverty. Yet, children from low-income families were believed to have fewer non-school learning opportunities than children from the middle class. "The phrase 'compensatory education' came from the need to 'compensate' for the low-income child's educational deprivation by offering more intensive instruction" (p. 13). One might infer from this context that compensatory education should involve additional instruction for students who are educationally disadvantaged as a result of economic deprivation.

Federally-funded compensatory education, begun under Title I of the Elementary and Secondary Education Act in 1965 and continued under Chapter 1 of the Education Consolidation and Improvement Act of 1981, has reflected the above definition by distributing funds to school districts based on indicators of poverty level, (generally) requiring that these funds be used in schools serving the poorest attendance areas, requiring within these schools that supplementary instructional services be provided in the basic skills areas and grades where students are the most educationally disadvantaged, and requiring that these services be provided to those students who are the most educationally disadvantaged in these areas and grades.

On the other hand, there are many educational services funded through other federal programs, by states, or with local school district resources, which may not be consistent with this definition, but which are considered by many to be compensatory education. These services include state compensatory education programs and state or locally-funded remedial education programs. Some would even include services to limited-English-proficient students.

These other types of compensatory education programs generally differ from the Title I/Chapter 1 model in that different procedures and criteria are used for selecting the students who receive the services. Students may be targeted solely on the basis of educational disadvantage without regard to economic deprivation. Or they may be selected on the basis of low achievement and other non-economic criteria. For example, the Sustaining Effects Study (SES) conducted during the late seventies by Systems Development Corporation found that about one-fifth of the responding principals indicated students were selected on the basis of membership in one or more specific target groups, and 32 percent reported that selection was based on parent requests (Hemenway, et al., 1978). Other forms of compensatory education may also differ in whether they require that the instructional services provided be supplemental to what students ordinarily receive in the regular instructional program. Again, the SES reported 17 percent of the principals indicating that compensatory education services were provided as part of an entire class that receives the same instruction (Hemenway, et al., 1978). "The CE [compensatory education] programs funded by different sources may differ in degree of formal structure, regulations for student-selection[sic], requirements for the provision of services, and emphases on various kinds of services" (Wang, et al., 1978, p. 157).

Past studies of compensatory education have not necessarily been restricted to Title I or Chapter 1 programs. Nor have they been restricted to programs that have followed the Title I/Chapter 1 model. In the 1972 survey of compensatory reading programs conducted by Educational Testing Service (ETS) the operational definition given to compensatory reading was "any reading instruction provided to students because they are reading below their grade level" (Rubin, et al., 1973, p. 2). The Sustaining

Effects Study used a definition of compensatory education that included "those services that are provided to educationally disadvantaged students that are in addition to, or different from regular services" (SES Project Staff, 1979, p. 201). Note that neither of these two definitions makes any reference to economic deprivation.

In a special report to the National Institute of Education (NIE) on state compensatory education programs, Funkhouser and Moore (1985) employed a definition that required states to specify a target population and to restrict what the district could do with the state funds. This study concluded that sixteen states were conducting their own compensatory education program, the same number obtained by NIE (1976) almost a decade earlier.

Prevalence of Compensatory Education

Districts. The percentage of school districts that have received federal funding for compensatory education has averaged around ninety percent for the last decade. In 1975-76, ninety percent of school districts serving kindergarten through eighth grade received funds from Title I (NIE, 1976). The Sustaining Effects Study estimated that, in 1976-77, 93.7% of the nation's 15,000 districts were participating in Title I. Less than three percent did not qualify for Title I funds (Wang, et al., 1978). The U.S. Department of Education reported that 87 percent of all school districts received Title I funds in Fiscal Year (FY) 1979 (An Evaluation of ESEA Title I, 1982). Finally, Advanced Technology reported in its 1981-82 survey that the percentage of school districts receiving Title I funds was over ninety percent (Advanced Technology, Inc., 1983).

The Sustaining Effects Study also reported that over half (56%) of the Title I districts also provided non-Title I compensatory education services (Wang, et al., 1978). About one-fourth of these provided additional services to students receiving Title I services; the others provided services to additional students not receiving Title I services (Hemenway, et al., 1978).

This study also reported that over half (54%) of the districts provided services to private school students (Hemenway, et al., 1978). This is higher than that reported by NIE for 1975-76, viz., 17 percent of all districts (NIE, 1976) and 43 percent of those districts with students attending nonpublic schools (NIE, 1977). This discrepancy is further illustrated by considering results reported by Advanced Technology, Inc. (1983). These results include estimates that about 25 percent of all Title I districts served nonpublic students in 1981-82, that only 45 percent of all Title I districts actually had nonpublic students residing in Title I attendance areas, and that 56 percent of those Title I districts with nonpublic students in Title I attendance areas provided services to them.

Schools. The 1972 ETS survey of compensatory reading programs in public elementary schools found that slightly more than sixty percent of the schools sampled had at least one Title I program--not necessarily in reading (Rubin, et al., 1973). One can also determine from data presented by Rubin, et al., that 87 percent of the 404 schools responding reported at least one compensatory reading program, 56 percent reported at least one Title I reading program, and 68 percent reported at least one non-Title I compensatory reading program.

The Sustaining Effects Study (Hemenway, et al., 1978) estimated that Title I programs existed in 70 percent of the nation's 63,000 schools, that 34 percent received other federal funds for compensatory services, that 40 percent received state funds for compensatory education, and that 28 percent used district funds for compensatory education. From the same study, Wang, et al. (1978) reported that 68 percent of the nation's schools received Title I funds, and 21 percent received non-Title I compensatory education funds only. Other data attributed to the Sustaining Effects Study and reported by the U.S. Department of Education (An Evaluation of ESEA Title I, 1982), when combined with the above estimates, would indicate that, in the late seventies, roughly one-third of all schools received Title I funding only, another one-third received Title I and other compensatory education funding, another one-sixth received non-Title I funding only, and the other one-sixth received no compensatory education funding.

Staff. In the 1976 NIE-funded survey of compensatory education, it was found that about ten percent (roughly 111,000) of all public elementary school teachers were involved to some extent in providing compensatory education. Almost three-fourths were full-time compensatory education teachers and most were paid by Title I funds. Title I funds paid the salaries of over half of all teachers' aides (NIE, 1976).

In a special study for the Office of Planning, Budget, and Evaluation of the U.S. Department of Education (USED), the number of full-time equivalent (FTE) staff funded by Title I/Chapter 1 between FY 1980 and 1984 were reported for several job classifications. The number of teacher FTEs averaged about 78,000 between FY 1980 and 1982 (under Title I) and about

69,000 in FY 1983 and 1984 (under Chapter 1). Teacher aide FTEs decreased consistently from 91,000 in FY 1980 to 61,000 in FY 1983 and increased to 66,000 in FY 1984. Overall, all staff FTEs funded by Title I/Chapter 1 decreased from about 200,000 in FY 1980 to 155,000 in FY 1984 (Advanced Technology, Inc., 1985).

Students. The NIE National Survey of Compensatory Education estimated that the number of students receiving compensatory education services in Title I school districts in 1975-76 was about 6.1 million (NIE, 1978). This number included about 122,000 students in public secondary schools and about 116,000 in private schools. The rest were from grades K-8 in public schools. The Sustaining Effects Study (Wang, et al., 1978) reported that one-fourth (5 million) of the twenty million public school students in grades 1-6 received compensatory education services in 1976-77. Of these, 49 percent were served by Title I only, 41 percent were served by non-Title I only, and the remaining 10 percent were served by both Title I and other compensatory education.

In 1981-82 it was estimated by Advanced Technology, Inc. that about 4.8 million students were served by Title I. Of these, about 200,000 were private school students, about 400,000 were in grades 9 through 12, and about 3.1 million were in grades 1 through 6 in public schools (Advanced Technology, Inc., 1983). A comparison of these figures with the NIE and SES estimates indicates an increase in the number of secondary and private school students being served. The number of public elementary school students seems to have remained at about three million.

USED has reported the following totals for students served by Title I/Chapter 1 over the past five years: 5.4 million in FY 80, 5.3 million in FY 81, 4.9 million in FY 82, 4.7 million in FY 83, and 4.8 million in FY 84 (Advanced Technology, Inc., 1985). The number of private school students served varied around 200,000 during that time period; the number of students in grades 9-12 varied between 400,000 and 500,000; and the number in grades 1-6 varied with the overall total, always remaining at 70 percent. This percentage is higher than that reported by the SES (59%), and is probably due to some states including students served only by other compensatory education in their Title I/Chapter 1 counts.

It is difficult to infer any changes in the patterns of how many students have been served by different sources of compensatory education funding. Each of the three major studies cited above collected this kind of data in a slightly different manner. However, if one assumes no changes in these patterns, it appears that over the past decade about 50 percent of all public elementary students receiving compensatory education services have received them from Title I/Chapter 1 only, 40 percent have received them from non-Title I/Chapter 1 sources only, and the other 10 percent have received services from both sources.

Funding. The largest portion of funding for compensatory education has been, by far, Title I of ESEA and Chapter 1 of ECIA. Appropriations for LEA (Part A) grants increased from 1.2 billion dollars in FY 1970 to three billion in FY 1984. NIE reported that state compensatory education appropriations in FY 1976 added approximately 0.6 billion dollars to the 1.6 billion appropriated for LEAs in that year under Title I. Funkhouser and Moore (1985) reported that fifteen states appropriated over 0.8 billion

dollars for state compensatory education in FY 1985. (One state's appropriation was not separable from funds for bilingual education.)

In 1975-76, the national average per-pupil expenditures for Title I services was $347 (NIE, 1976). Higher averages were reported for districts with higher per-pupil expenditures with non-federal funds, and for districts with higher average family income. In 1976-77, the per-pupil expenditures estimated by the Sustaining Effects Study (Hemenway, et al., 1978) for Title I were $415 districtwide ($413 for private school students). For district- or state-funded compensatory education services, the average was $371, and for other federally-funded compensatory education it was $297. Schoolwide averages of per-pupil expenditures (which probably excluded district administrative costs as well as secondary programs) were lower. Title I was $375, district/state was $316, and other federal was $174. Data for 1981-82 indicate that districtwide per-pupil expenditures for Title I services had increased to close to $600, with higher averages in larger, more urban, poorer districts in the North Central region (Advanced Technology, Inc., 1983).

Types of Services

Compensatory education services have focussed on, but have not been limited to, instruction in the basic skills areas, i.e., reading, other language arts, and mathematics. The prevalence of different types of services is discussed in this section in terms of the amount of funding, the number of districts/schools/staff providing services, and the number of students receiving services.

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Funding. In a description of the Title I-funded programs sampled in the Sustaining Effects Study, Carter (1983) presents the following summary:

> The largest amount of Title I funds pays for additional regular teachers, special teachers, aides, and other instructional personnel. Smaller, but significant, amounts go for administrative services, training, planning, and evaluation. Also, Title I funds are used for instructional materials and audiovisual equipment, as well as building alterations. Students receive guidance, counseling, health, and nutritional services from Title I funds. (p. I-7)

The vast majority of Title I/Chapter 1 funds have been spent on instructional services. The NIE National Survey found that three-fourths of the Title I budget was used for instructional services compared with five percent being used for non-instructional (auxiliary) services and one-fifth being used for other expenditures such as personnel benefits and administration (NIE, 1977). The 1981-82 survey conducted by Advanced Technology, Inc. (1983) reported 79 percent of district Title I funds allocated for instruction and three percent for non-instructional services.

Districts/Schools/Staff. In 1975-76, NIE (1976) found that the subjects in which Title I districts were most likely to provide compensatory instructional services were remedial reading (69%), mathematics (45%), preschool/kindergarten readiness activities (38%), language arts/communication skills (30%), and English as a second language (10%). Non-instructional services were most likely to be provided in the form of resource centers (28%), libraries (21%), medical/dental services (20%), psychiatric and diagnostic services (19%), transportation 15%), food (14%), speech and hearing therapy (14%), and social work (12%).

Correspondingly, NIE reported that the greatest percentage of compensatory education teachers taught remedial reading (44%), 32 percent taught

mathematics, 30 percent taught language arts/communication skills, 17 percent provided instruction in preschool/kindergarten readiness activities, while three percent taught English as a second language. Over one-third of all compensatory education teachers provided instruction in more than one subject area. Those teaching two areas (17%) most frequently combined reading and mathematics.

Advanced Technology, Inc. (1983) reported that in 1981-82 almost all (97%) Title I districts provided services in reading, 65 percent provided services in mathematics, 34 percent in other language arts, and 11 percent in English for students of limited English background. More increases than decreases in service provision in these areas were reported between 1978 and 1981.

Students. During 1975-76, one-half of all compensatory education students received instruction in reading, 44 percent received mathematics instruction, and 35 percent were served in language arts (NIE, 1976). Based on information collected through the Title I Evaluation and Reporting System (TIERS) in FY 1980, the U.S. Department of Education (1982) reported to Congress that 78 percent of the 5.4 million Title I participants received instructional services in reading, 46 percent received services in mathematics, and 19 percent received other language arts instruction.

The FY 1980 TIERS data also includes estimates of non-instructional services: health/nutrition - 28%, guidance/counseling - 15%, "other" - 8%, and transportation - 3%. The 1975-76 NIE survey estimates for these services were health - 13%, food - 1%, counseling - 9%, social work - 11%, "other" - 6%, and transportation - 6%.

In succeeding years (FY 1981-84) , the USED TIERS data have shown that about three-fourths of Title I students have received services in reading, a little less than half have received mathematics instruction, and about one-fifth have received language arts (Advanced Technology, Inc., 1985). English for limited English speaking students has increased from 7 percent in FY 1980 to 12 percent in FY 1984. Non-instructional services in health/nutrition have decreased to 15 percent in FY 1984, attendance/guidance services increased, then decreased to 17 percent, and transportation has hovered around 6 percent.

Nature of Compensatory Education Instructional Services

There are many different ways in which the nature of instructional services provided in compensatory education can be described. In addition to knowing that students receive "instruction in mathematics," what can be said about how that instruction is provided? Where is it provided? How much is provided? How large are the instructional groups? How many and what types of instructional staff are present? What instructional methods and materials are used? How is student progress assessed and feedback provided?

In addition to how, one may also ask under what conditions does compensatory instruction take place? What is the climate of the school like? What is the quality of instructional leadership? How are parents involved in the students' instruction? What facilities are available?

Studies of compensatory education during the last fifteen years have tended to describe instructional services in terms of those characteristics believed to related to the effectiveness of the instruction. The 1972 ETS survey of compensatory reading programs in grades two, four and six (Rubin, et al., 1973) gathered data in such areas as instructional organization (e.g., class size, grouping criteria, and length of instructional periods), instructional procedures (e.g., time spent in various activities, approaches, goals, etc.), instructional materials (selection of, satisfaction with, as well as use of), and teacher characteristics (including education, experience, and various attitudes toward the school, the teaching of reading and the students)

In the NIE-funded 1975-76 survey of compensatory education in grades K-8 collected data in five areas: "time spent on instruction, class and group size, teacher qualifications and characteristics, individualization, and the location of instruction" (NIE, 1977, p. 22). Instructional time focused on scheduled hours per week, teacher information included education, certification, use of different types of instructional staff, and ethnicity/race. Individualization consisted of the use of alternative learning paths and sequencing, individual or small group pacing, specific learning objectives, and diagnostic/prescriptive activities. Location of instruction emphasized the setting, e.g., pull-out or in-class. The actual relationship of these and other classroom processes to student achievement was examined in a related effort - the Instructional Dimensions Study (Cooley and Leinhardt, 1978).

In a major study of the implementation and effect of compensatory education in grades 1-6, Systems Development Corporation and various subcontractors attempted to answer a variety of questions about compensatory education. Included were "What is compensatory education?" and "What Classroom Practices Influence Student Learning?" The former question was answered through teacher and principal questionnaires which included items on time scheduled for instruction, instruction missed during compensatory instruction, class and group size, types of instructional staff, instructional setting, individualization of the type and content of instruction, instructional activities, and the use of different materials and equipment. Special emphasis was placed on comparing these aspects of instruction for students who received compensatory education versus those who did not.

The latter question was examined in a special study of 55 high poverty schools in 1978-79 (Carter, 1983). The results of this study showed a direct relationship between student achievement in the spring and the following: (a) amount of student on-task behavior; (b) correspondence between curriculum and achievement test content; (c) amount of coordination of instruction; (d) socioeconomic status; and (e) achievement in the fall. Other variables found to contribute indirectly to student achievement were proportion of teacher's time spent in instruction versus in behavioral management, teacher experience and teacher satisfaction.

In its study of district practices, Advanced Technology (1983) examined two areas bearing on compensatory instructional practice. These were concentration of services (class size, teacher-pupil ratio, scheduled time, and instructional setting); and teacher characteristics (experience, time spent working with students, constraints on teacher quality, and principals' satisfaction). Parent involvement was also studied, but from an administrative, as opposed to instructional, perspective (e.g., existence of parent advisory councils and formal involvement in planning, implementation and evaluation).

The findings of these and other studies concerning the nature of compensatory instructional services are presented below. Results relating to teaching staff characteristics and coordinating mechanisms are presented later in separate sections. This review of studies of the nature of compensatory instructional services is organized into four major categories. The first, <u>instructional exposure</u>, includes scheduled time, class size, group size, number of instructional staff, and other indicators of level of opportunity for the student to learn. The next, <u>instructional</u>

strategies, includes setting instructional objectives, sequencing and pacing, diagnosing student needs, criteria for grouping students, monitoring progress, rewards/feedback, etc. The third category concerns the instructional content, e.g., the curriculum, instructional activities, approaches to instruction, as well as the materials, equipment and facilities chosen and available to support instruction. Finally, factors that provide the instructional climate, such as leadership, classroom and school climate, discipline, expectations for students, and parent involvement, are described and discussed. Within each of these categories, comparisons of compensatory instruction with non-compensatory, "regular" instruction are reported wherever possible and appropriate.

Instructional Exposure

During the past fifteen years, almost every study of compensatory instructional practice has looked at indicators of the amount of instruction that students receive. Exposure or opportunity to learn has been measured in a variety of ways. In addition to the amount of time scheduled for or allocated to learning, descriptive studies/surveys have looked at class or group size, pupil-instructor ratio, the amount of time instructors are working directly with students, etc. Investigations into correlates of student achievement have measured engaged time (Berliner, 1979), interactive on-task behavior (Stallings, 1980), and the overlap of test content and curriculum (Carter, 1983) as different aspects of the opportunity to learn. Cooley and Leinhardt (1978) included a variety of measures of opportunity in their study of instructional dimensions that relate to student achievement, e.g., student enrollment, attendance, and transfers, time spent in instruction weekly and yearly, percent of time on-task, as

well as the overlap between the curriculum and achievement testing.

The results of past descriptive studies/surveys of compensatory education (CE) students' exposure to instruction are presented below. Categories have been established to help organize these results: scheduled time, class or group size, and number and type of staff. Where possible, comparisons are made between the amount of instructional exposure for students receiving compensatory education versus those not receiving it. Public/nonpublic comparisons are occasionally possible, also.

Scheduled Time. In 1972, the ETS survey found that CE students were receiving compensatory reading instruction for about one-half hour per day, five days per week, and averaged 2.8 hours per week (Drum & Calfee, 1979). NIE (1976) reported finding that CE students received an average of 3.8 hours a week of compensatory instruction in reading, 4.2 hours per week in language arts, and 3.3 hours per week in mathematics. The average amount of all compensatory instruction received per week was five and a half hours, reflecting the possibility that CE students could receive instruction in more than one subject area. Depending on the grade level, compensatory instruction accounted for one-sixth to one-fourth of the total available instructional time.

The Sustained Effects Study (Carter, 1983) measured scheduled time for CE instruction in reading and mathematics a little differently. In the 1976-77 school year, it was found that CE students averaged slightly over nine hours per week of total instruction in reading in first grade, declining to six and a half hours in sixth grade. Non-CE students in CE schools averaged only slightly less - nine hours in first grade, declining to five

hours in the sixth grade. Students in non-CE schools average about the same as non-CE students in CE schools. In mathematics, CE students averaged 5.8 hours per week of instruction (both CE and non-CE). Non-CE students in CE and non-CE schools averaged 4.8 hours per week.

While tempting, it is not advisable to conclude that CE reading instruction averaged less than one hour per week in first grade, increasing to 1.5 hours in sixth grade, or that CE mathematics instruction averaged one hour per week. The question of what CE students were "missing" during their instruction needs to be addressed. For example, Pikulski and Kirsch (1979) reported that two-thirds of the teachers in the ETS survey of compensatory reading instruction said such instruction was provided during the time in which regular reading instruction was going on. On the other hand, NIE (1976) found that only about ten percent of teachers reported students missing the same subject of their compensatory instruction, while about half reported that no instructional subjects were missed. It is difficult to determine whether this difference was due to changing practice or questionnaire differences.

Carter (1983) points out that the Sustained Effects Study asked teachers what other students were doing while CE students were receiving CE instruction. The majority of teachers mentioned instruction in the same subject (reading or mathematics) as was being taught in CE. Other activities mentioned were mathematics (during CE reading) or reading (during CE mathematics), other subject areas, study time, student selected activities, and library visits.

In the 1981 survey of Title I district practices (Advanced Technology, 1983), it was found that the average CE class period was 44 minutes per day and that most classes met five days per week. The average hours per week that CE students received CE instruction was reported to be four in public schools and 2.6 in nonpublic schools. Concerning what the CE students may have missed, the only data collected were in regard to policies that principals might have on what students were not allowed to miss during CE instruction. Forty percent mentioned reading, 22 percent mentioned mathematics, and 18 percent said no basic subject area could be missed.

Finally, some of the data collected by the U.S. Department of Education as part of the Title I Evaluation and Reporting System (TIERS) provide another way of describing scheduled instruction time for CE students. In an analysis of Title I project data reported for the 1981-82 school year (U.S. Department of Education, 1984), it was found that the average (median) project provided between two and three hours of instruction per week in reading and mathematics in grades two and six. This average was between three and four hours per week for projects serving the tenth grade. This higher average was possibly due to the relative prevalence of "replacement" projects at the secondary level that provide CE instruction for an entire school period (e.g., 50 minutes). Similarly, the median number of hours of instruction per year was reported to be almost 80 for projects serving grades two and six, and almost 100 for grade ten, in both reading and mathematics.

In summary, these studies indicate a range of scheduled time for compensatory education between 2.5 and 5.5 hours per week depending upon the which and how many subject areas are included. The variations from one

study to the next may be due as much to differences in the way data were collected as to the years in which they were collected. In spite of methodological differences, a few conclusions appear reasonable. First, CE students have received more instruction in reading, language arts, or mathematics than non-CE students. Second, CE instruction has tended to be provided every day of the week. Finally, while the total amount of instruction any student receives in a basic skills area may decrease as he/she matriculates through the grades, the amount of scheduled time for CE instruction may increase, especially between the elementary and secondary grades.

Class/Group Size. Pikulski and Kirsch's (1979) analysis of the ETS survey of reading compensatory education reported that the average size of a CE class was 28 students and that the size increased with grade level. Because of the questionnaire item used to collect this information, this number could well have included all, not just CE, students in the class. The Sustained Effects Study (Carter, 1983) found class size for instruction in mathematics to vary across grades from 21 to 25 students in classes with CE students and from 23 to 26 students in classes with no CE students. Class size for instruction in reading varied between 17 and 22 students for classes with CE students and between 18 and 24 for classes without CE students. In each case, the ranges were due to an increase in class size from the first to the sixth grade. Again the questionnaire item used to collect this information indicates that all, not just CE students were included in the definition of class size (The SES Project Staff, 1979, p. 92).

On the other hand, the NIE survey (1976) found that the average class size for CE reading instruction was nine students, and for mathematics and language arts it was 14. This study also found that class size tended to increase with grade level. The district practices study done by Advanced Technology, Inc. (1983) also reported Title I class sizes, regardless of subject area, to average about nine students (almost ten in public schools and about six for nonpublic schools).

In summary, it appears that students receiving compensatory education have tended to come from or be in classes not much smaller than classes with no CE students, and class size has tended to increase with grade level. On the other hand, the average size of "classes" composed entirely of CE students appears to have been much smaller, namely nine to fourteen students. As Carter concludes in his report of the Sustained Effects Study, "...in contrast to regular students, Title I students receive much more instruction ... in small group settings." (1983, p. III-29)

Number and Type of Staff. Another way to describe or measure the exposure that students have to instruction is to look at the number and variety of instructional staff available for direct instruction by means of such variables as pupil-teacher ratio, the use of instructional aides, the level of specialization of the teacher, and the frequency of small group or individual instruction.

Pikulski and Kirsch (1979) report that the 1972 ETS survey of compensatory reading found the typical reading group arrangement to be one adult with 2-10 students. Analyses of 1981-82 project data from TIERS (TIERS Project Information, 1984) indicates that the average (median) student-

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instructor ratio for Title I reading and mathematics projects was about 4:1 in grades two and six, but over to 5:1 for tenth grade. The average Title I student was in a project with a student-instructor ratio of about 5:1 in grade two, about 6:1 in grade six, and around 8:1 in grade ten. The higher averages for students versus projects was undoubtedly due to the fact that projects serving larger numbers of students tended to have higher student-instructor ratios. Comparing these results to those for class size discussed above, it appears that either CE instruction tends to occur in groups smaller than the class and/or it tends to involve more than one instructor (e.g., a teacher and an aide providing instruction together).

The ETS survey found that 27 percent of the teachers of compensatory reading were supported by one or more aides (Drum & Calfee, 1979). The NIE survey in 1976 found that 42 percent of CE teachers had aides available to them (NIE, 1977). Instruction in reading was provided to most (75%) CE students by a specialist, 53 percent were taught by regular classroom teachers, and 49 percent received instruction from aides. In mathematics and language arts, most students (74% and 77%, respectively) were taught by classroom teachers, 62 and 67 percent were taught by aides, and 49 and 47 percent were instructed by specialists (NIE, 1976).

Carter (1983) presents some results from the Sustained Effects Study that compare the average proportion of time that CE students receive instruction in various ways with these proportions for non-CE students. In reading, CE students received less instruction in a whole class setting than non-CE students (roughly 20 versus 25 percent of the time) and spent less time doing individual seatwork (25 versus 33 percent) . They spent more time receiving instruction from specialists (20 versus almost zero

percent) and from aides (10 versus almost zero percent). Very similar results were found in mathematics.

In summary, CE students typically have received instruction in groups of less than ten students with one instructor or in larger groups with more than one instructor (e.g., teacher and aide) such that the average student-instructor ratio was less than ten. This ratio has been smaller in the lower grades. Most CE students have received their instruction from a classroom teacher, a specialist, an aide, or some combination of these. The amount of instructional time they have spent with a specialist or aide has been considerably more than non-CE students.

Instructional Strategies

Instructional strategies reviewed here include (a) grouping for instruction; (b) the "individualization" of instruction through variations in instructional objectives, pacing and sequencing for different students, and the use of diagnostic and prescriptive procedures, and (c) monitoring student progress and providing feedback and rewards.

Grouping. Students can be grouped on the basis of various criteria in order to provide more effective instruction. Some controversy exists over which criteria are appropriate, especially over the effectiveness of grouping by achievement or ability level. Kulik and Kulik (1982) conclude that ability grouping in secondary schools makes little difference except for high ability students. On the other hand, teachers have been observed at the elementary level teaching reading differently to different ability groups, the lower ability groups being taught in such a way that might communicate lower expectations to these students (Anderson, R. C., et al., 1985).

In 1972, ETS found that CE teachers of reading usually use reading grade level and specific skill deficiencies to form instructional groups, while only occasionally or rarely using shared interests or special projects. Also, the average teacher reported changing group membership less frequently than once a month. In 1977, Systems Development Corporation (SDC) found that, when grouping was used, students were usually placed into groups on the basis of teacher's judgment of achievement level or student's mastery of specific instructional objectives. Previous achievement was used somewhat frequently in reading in the higher grades (Wang, et al., 1978). Changes in group membership were less frequent than once a month; they were more common in mathematics (4-9 times per year) than in reading (3-5 times per year). Differences among CE and non-CE students and between CE and non-CE schools were negligible.

Individualization. Individualized instruction is another strategy with mixed indications that its implementation leads to more effective instruction. In their Instructional Dimensions Study, Cooley and Leinhardt (1978)

found that the incidence of individualization added little to the prediction of student achievement levels. However, they pointed out two methodological limitations that may have obscured the hypothesized relationship: measures of individualized instructional practices were insufficiently reliable, and the actual incidence of such practices might have been too low to produce results. Wargo, on the other hand, found small group or individualized instruction to be one of several components that contributed to the effectiveness of compensatory education programs (1977).

The NIE survey of compensatory education asked teachers to respond to questions about four types of instructional practice that represented individualized instruction: (1) the existence of alternative learning paths and sequencing for individual students; (2) the use of individual or small group pacing; (3) the assignment of specific instructional objectives or activities to individual students; and (4) the use of diagnostic and prescriptive activities (NIE, 1976). A majority (two-thirds to three-fourths) of CE reading teachers indicated the use of sequencing and pacing for individual students. However, less than half (35-50%) reported establishing specific instructional objectives or using diagnostic/prescriptive techniques. Results for language arts and mathematics teachers were quite similar.

The Sustained Effects Study included a comparison of CE and non-CE students on the percentage of students whose teachers reported that various aspects of instruction varied among students, on the basis of what content their teachers taught to regular and low-achieving students, and on the frequency with which their teachers' regular and low-achieving students engaged in selected activities (Wang, et al., 1978). The greatest amount

of variation occurred for "expected rate of progress" (about 90% of all students' teachers reported variations in this for individual students). In addition, teachers of many students (50-80%) reported varying teaching methods, instructional materials, instructional objectives, and the sequence of learning activities. Differences between CE and non-CE students were not systematic.

Basing the selection of teaching content for reading on individual needs was uncommon in the lower grades, but became more frequent (i.e., true for 20-30% of the students) in grades 4-6. In all grades a combination of using an approved curriculum and individual needs was the most common basis for selecting teaching content in reading. In mathematics the results were the same with one important additional trend - the use of a curriculum based on individual needs was more common for CE than non-CE student, and the use of an approved curriculum was less common for CE students.

In mathematics, there were no differences between CE and non-CE students in the specific learning activities on which most students spent their time. In most grades, reviewing computational skills, learning about fundamental operations, and learning the vocabulary of mathematics were the most frequent activities. In reading, however, basic skill activities (e.g., letter-sound correspondence) were more prevalent in the lower grades, while comprehension, using context clues, reference materials, and syllabification were most frequent in the higher grades. More importantly, in grades 5 and 6, there was more emphasis on basic skill activities for CE than for non-CE students.

Monitoring and Feedback. Monitoring student progress provides the information needed to provide feedback and rewards to students. The NIE survey of 1976 found that most (about 70%) CE teachers systematically recorded student progress in reading, language arts and mathematics at least once per week (1976). The Sustained Effects Study (Wang, et al., 1978) found that teachers provided feedback to students about once or twice per week. In the lower grades, this feedback tended to be information about individual strengths and weaknesses as opposed to a letter or number grade. Differences between feedback for CE and non-CE students were not found.

Teacher praise can be a form of reinforcement, especially when it is given infrequently, and if it is credible, specific and contingent upon attaining instructional objectives (Good & Brophy, 1978). However, there is some question about teacher praise having any effect at the secondary level (Griswold & Arnold, 1980). The Sustained Effects Study found that only about 20 percent of the teachers surveyed used praise or other rewards to recognize students' achievement of specific objectives. The rest used praise/rewards regardless of achievement to establish a good climate for the student (Wang, et al., 1978).

The various instructional strategies reviewed above appear to have been treated sparingly by studies and surveys of compensatory education in the past fifteen years. This is probably due to the disagreement over the efficacy of these strategies as well as the difficulties encountered in their definition and measurement.

Instructional Content

For this review, instructional content refers to both the curriculum used in compensatory instruction, including objectives and activities, and instructional materials, including text material and equipment. Past surveys of compensatory education have concentrated on describing the type of activities in which students have been engaged or the instructional "approach" that has been employed by the teacher. For example, based on the 1972 ETS survey of compensatory reading instruction, Drum and Calfee (1979) report that a variety of approaches were being used. Roughly one-fourth were relying solely on a basal approach, another fourth were using some kind of individualized approach, one-sixth were using language experience, while still another fourth used a variety of approaches. In all approaches, however, comprehension was the most important goal, and favorable attitudes toward reading were sought by all. A comparison of approaches used with CE and non-CE students in the Sustained Effects Study is summarized by Carter (1983). The approaches to the teaching of reading in the first grade were rank ordered the same by teachers of CE and non-CE students. However, in the sixth grade the three most used approaches for CE students were the three least used for non-CE students. The non-CE approaches in grade six tended to be more "advanced," e.g., teaching forms of literature and literary appreciation.

The ETS survey found that the most frequently mentioned activities that CE students spent a great deal of time on were phonic/structural analysis in the second grade, and learning word meanings in grades four and six (Howlett & Weintraub, 1979). As reported above, the Sustained Effects Study found that, in reading, basic skill activities were more prevalent in

the lower grades and higher-order activities were more prevalent in the higher grades, especially for non-CE students, but less so for CE students (Wang, et al., 1978).

The use of instructional materials in compensatory education certainly has emphasized variety. The ETS survey found that only 24 percent of CE teachers used a single set of materials (Drum & Calfee, 1979). The Sustained Effects Study found that, while all students used a variety of materials and equipment, CE students tended to receive more instruction through materials in addition to a regular text. They also received more instruction through the use of equipment, such as sound projectors, tape recorders, listening centers, etc. (Carter, 1983). Whether the availability of a variety of materials leads to more effective instruction is another question. The ETS survey showed that there was a relationship between using a variety of materials and teacher satisfaction with them (Drum & Calfee, 1979). The Beginning Teacher Evaluation Study (McDonald & Elias, 1976) found that teacher access to and use of a rich variety of materials lead to enhanced student achievement.

Instructional Climate

A number of factors which would seem to affect the attitudes of students and instructional staff alike toward the educational process as well as the specific subject matter being taught have been grouped together into this section. These factors range from the instructional leadership of the administration to the expectations for student progress expressed by the instructional staff. They include such apparently diverse influences as disciplinary practices, the involvement of parents in the educational

process, and the attitudes of instructional personnel toward the school, facilities and materials, and the students.

A positive instructional climate is one in which high expectations for student achievement and social behavior are communicated. Discipline is fair and consistent; order, structure and purpose prevail (Anderson, 1982). Goals and objectives are clear; parents and other members of the community are involved through policy-making, advisory councils, support organizations, and contributing directly to the instructional process, and administrators provide strong leadership in pursuing the goals of the school and in supporting staff (Squires, et al., 1984).

In the area of teacher expectations for students, the 1972 ETS survey found the dominant beliefs about CE students to be (a) they want to learn, but do not have the proper background for school work; (b) they have different linguistic experiences; (c) they need to learn to verbalize complete thoughts; and (d) they need to improve their self-image (Harste & Strickler, 1979). These authors also report that the ETS survey indicated that the satisfaction of CE teachers with other teachers and the administration was high. On the other hand, their satisfaction with student ability, student attitudes, the school's philosophy of education, and the physical facilities was only moderate. Their attitudes about the worth and cost of compensatory education were very positive.

Little data have been collected in past studies of compensatory education on the amount or quality of instructional leadership. The Sustained Effects Study asked teachers about their satisfaction with decision-making procedures and the role of the building principal (Hemenway, et al., 1978).

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Over ninety percent of the teachers were satisfied with decision-making procedures in their school. Almost ninety percent felt their principals were supportive of their work as a teacher. Over half thought their principal encouraged innovation and another third saw their principal as neutral. On another item, teachers indicated something between neutrality and positive attitudes about the school, the leadership of the principal, and the school climate.

The involvement of parents in their children's education may have some effect on student achievement, especially if that involvement is initiated by the parents (Brookover & Lezotte, 1979). Participation in their children's instruction seems to provide the greatest benefit - through tutoring and home-school partnerships (Sinclair, 1981, and Walberg, 1984).

The Sustained Effects Study reported considerable information about parent and community involvement in compensatory education (Wang, et al., 1978). The most frequent type of involvement occurred in regularly scheduled meetings. Very few Title I districts reported no Parent Advisory Council (PAC) or no PAC involvement in planning the program. Efforts by the schools to encourage parent involvement included newsletter publication, evening parent conferences, adult education and meetings in the school, providing means for parents to participate in planning and decision making, faculty-parent social functions, parent volunteers, and home visits by staff. Regarding ways in which parents were involved, parents role in instructional decision making was found to be low, about half of the parents had discussed the general progress of their children with teachers, and about half had participated in special school events. Other forms of participation were quite low.

In the district practices study, Advanced Technology found that 94 percent of Title I districts had districtwide PACs. Most of these had PACs in individual Title I schools. And most had parents providing input into at least one of the following: program design, implementation, or evaluation. The level of parent involvement was directly related to the size of the district. This relationship was also found in the Sustained Effects Study.

Characteristics of Compensatory Education Program Staff

This section of the literature review describes the education, training, experience and credentials of compensatory education staff and the nature of their positions as documented by past surveys of compensatory education. Characteristics of non-compensatory education staff are presented for comparative purposes wherever possible. The characteristics of teachers have been emphasized in these past studies. However, data on instructional aides and building principals have been reported in some cases.

Education and Training

Using the data from the 1972 ETS survey of reading compensatory education programs, Harste and Strickler (1979) reported that almost all (97%) compensatory education (CE) teachers had at least a bachelors degree and that from 20 percent (in grade two) to 29 percent (in grade six) had at least a masters degree. In 1976, NIE (1976) found that 97 percent of CE teachers had at least a bachelors degree. About one-third of these had additional graduate coursework, and another one-third had attained the masters degree or more. The Sustained Effects Study (Hemenway, et al., 1978) found that the percentage of all teachers with at least a masters or other graduate degree increased from 38 percent in grade one to 50 percent in grade six. Carter (1983) presented additional analysis results that showed very little difference in the highest degree attained by teachers of CE and non-CE students in CE and non-CE schools.

Two trends are apparent in the above findings. First, the highest degree attained by teachers of CE students tends to be greater for teachers of higher grade levels, at least at the elementary levels. Second, the level of formal education of CE teachers over the years spanned by these studies appears to have increased. None of these studies reported information on the educational background of instructional aides. Only one, the Sustained Effects Study, described the education level of school principals. Hemenway, et al. (1978) reported that almost all (97%) principals had attained at least a masters or other graduate degree.

In addition to the formal education levels of staff, past surveys have inquired into other types of training that CE staff have received. Harste and Strickler (1979) report that 55-60 percent of the CE teachers in the ETS survey had received some special training in diagnosing or treating reading problems. The majority of those receiving such training did so at the graduate level. NIE (1977) reported that 67 percent of CE teachers had taken coursework beyond the bachelors degree. The Sustained Effects Study found that CE teachers had taken an average of almost three college courses in the teaching of reading and almost one course in the teaching of mathematics. Non-CE teachers averaged slightly over one course in reading and half of a course in mathematics (Carter, 1983). Carter also reports that CE teachers averaged more hours than non-CE teachers of inservice training in reading (about 14 versus 11) and in mathematics (about 9 versus 6). Advanced Technology, in its 1981-82 study of district practices (1983), found that the average number of inservice training sessions attended by Title I teachers ranged from around three for local district/school sponsored inservices to around one for college classes, workshops outside the district and conferences.

Experience and Certification

With the exception of the district practices study conducted in 1981-82 (Advanced Technology, Inc., 1983), estimates of CE teaching experience have been relatively stable since 1972. The ETS survey of compensatory reading services found that teachers averaged about 10 years of total experience and three to six years of experience in their present school (Harste and Strickler, 1979). NIE (1976) found that CE teachers averaged 10 years total experience, also, and four years in their present school. Interestingly, this survey also found that the average amount of experience in teaching the compensatory instruction subject area was only two years. The Sustained Effects Study found the average total experience to be about 11 years and the average experience in the present school to be about seven years (Hemenway, et al., 1978). Teachers of only CE students tended to have about one year less in experience, and teachers of both CE and non-CE students averaged between CE and non-CE teachers (Carter, 1983). The Advanced Technology report of the district practices study indicated that Title I instructors averaged 5.5 years of experience (1983). The degree to which this estimate differs from the others may have more to do with differences in instrumentation and sampling than it does with an actual trend.

The experience of principals and instructional aides was not found reported in any of these past surveys with one exception. The Sustained Effects Study reported the average building principal as having ten years of teaching experience, almost nine years experience as a principal or assistant principal, and six years as the principal in their present school (Hemenway, et al., 1978). Similarly, only one of these studies, the

1975-76 NIE survey, reported information concerning the certification of CE teachers. Ninety-nine percent were certified, with the majority (58%) having permanent certification, another 25 percent having renewable certificates, and only 16 percent with temporary certification (NIE, 1976).

Nature of Teaching Positions

The type of positions held by compensatory education teachers, such as full- versus part-time or subjects and/or types of students taught, was not reported in the 1972 ETS or 1976 NIE surveys. The Sustained Effects Study and the district practices survey, however, did report findings in this area. Hemenway, et al. (1978) reported that almost all (95%) of the teachers in the Sustained Effects Study were full-time. Carter (1983) reported that, for reading, about 17 percent of the teachers in CE schools taught only CE students, 60 percent taught both CE and non-CE students, and the rest taught only non-CE students. In mathematics, only 11 percent taught only CE students, 43 percent taught both, and almost half taught only non-CE students. In a similar vein, Advanced Technology, Inc. (1983) reported that almost half (47%) of the school districts in the study had some Title I teachers who were paid partially by non-Title I funds.

Coordination of Compensatory Education with Other Instruction

Compensatory education, represented principally by Chapter 1 programs, has been designed to provide supplementary instruction. As state and local education agencies have developed Title I/Chapter 1 programs over the years, the requirement to supplement other instruction has led to a predominance of practices which have separated compensatory education from the regular and other special instructional programs. This separation has been most commonly effected by pulling students out of their regular instructional program to receive compensatory education. As Advanced Technology reported (1983), over ninety percent of school district Title I programs in 1981-82 employed a pullout design alone or in combination with an in-class design, compared with only thirty percent that used an in-class design. The second most frequently mentioned reason for employing the pullout setting was to demonstrate compliance with program requirements (probably the "supplement, not supplant" requirement).

The use of pullout designs, and other methods of maintaining the supplemental nature of compensatory education, can lead to the use of different instructional methods, materials and objectives from those employed in the regular instructional program. The potential exists for inhibited communication among teachers and other threats to a coordinated instructional program (e.g., see Stickney & Plunkett, 1982, or Allington, 1986). Advanced Technology (1983) also reported that about one-fifth of the regular classroom teachers in the district practices study reported problems associated with CE instruction provision, e.g., scheduling, missed classwork, and interruptions for pull-out. Other research is adding evidence to a prevailing intuition that coordination of instruction is

important to instructional effectiveness (e.g., Carter, 1983).

This section summarizes what has been found in past studies of compensatory education concerning the type of instructional settings employed and mechanisms used to facilitate coordination with the regular program given these typically separate settings.

Instructional Setting

Pikulski and Kirsch note that the ETS survey of compensatory reading instruction found about 80 percent of such instruction was provided in the morning and virtually none was provided outside of the regular school day. No data, however, were collected on where that instruction was provided. In 1976, NIE found that 85 percent of reading CE programs employed a pull-out setting; about two-thirds of language arts and mathematics programs were pull-out (NIE, 1976).

In addition to the results of Advanced Technology's district practices study presented above, this survey also found that almost all principals interviewed said that Title I instruction was provided during the regular school day. Almost two-thirds of the districts surveyed took students out of their regular classroom to another room for Title I instruction. The average percentage of students served in a separate room was 58 percent; the average percentage served in the regular classroom was 37 percent. In districts where non-public school students were served, 22 percent served some non-public students outside of their school (16 percent in a public school); 83 percent of the districts served non-public students in their own school (Advanced Technology, Inc., 1983). The Sus-

tained Effects Study found similar percentages: 91 percent of the districts served non-public students in their own school, while 10 percent served them in a public school (Hemenway, 1978).

Coordinating Mechanisms Employed

Past surveys of compensatory education have collected very little information concerning the coordination of CE programs with the regular program (or other special programs). The Sustained Effects Study asked participating teachers to describe the relationship between the regular and compensatory instructional programs in their school. About one-third of those for whom the question had meaning said that the regular and CE programs were combined with continual instructional coordination; about one-sixth said the two programs were quite independent; and roughly one-half said they were independent, but showed evidence of some coordination. Advanced Technology (1983) reported that many survey respondents felt that Title I reinforced the regular classroom activities, using the same skills and sequences, and that Title I was more individualized, slower, and used a more basic approach. When asked how often they met with Title I teachers to coordinate instruction, one-fourth of the regular classroom teachers said daily, another 29 percent said once or twice per week, and 14 percent said once or twice per month. Only fourteen percent said infrequently or never. About half of these teachers said they talked about student problems, needs or progress, while about one-fourth mentioned instructional techniques or skills needing reinforcement in Title I.

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